REMARKS / ARGUMENTS

I. General Remarks

Please consider the application in view of the following remarks. Applicants thank the Examiner for his careful consideration of this application.

II. Disposition of Claims

Claims 1-7 and 32-34 are pending in this application. Claim 32 has been cancelled herein.

Claim 34 has been amended herein. These amendments are supported by the specification as filed.

Claim 32 stands rejected under 35 U.S.C. § 102(b). Claims 1-7 stand rejected under 35 U.S.C. § 103(a). The Office Action has objected to claims 33 and 34.

III. Rejections of Claims

A. Rejections of Claims Under § 102(b)

Claim 32 stands rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,002,125 to Phillips *et al.* ("*Phillips*"). (Office Action at ¶ 4.) In this response, Applicants have cancelled claim 32, and thus respectfully submit that this rejection is now moot.

B. Rejections of Claims Under § 103(a)

Claims 1-7 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over *Phillips*. With respect to these rejections, the Office Action states:

> Applicants claim a method of crosslinking a polysaccharide comprising the steps of: (a) providing a metal coordinating group having a reactive site, (b) derivatizing a polysaccharide with the metal coordinating group to produce a derivatized polysaccharide having bidentate ligands, and (c) crosslinking the derivatized polysaccharide having bidentate ligands with a metal ion to form a metal ligand coordination complex. Additional limitations in the dependent claims include the method wherein the polysaccharide comprises specific types of polysaccharides; the method wherein the derivatized polysaccharide having bidentate ligands is crosslinked with a crosslinking agent comprising a compound chosen from the group consisting of copper, nickel, iron, ruthenillm, palladium, platimlm, iridium and cobalt; the method wherein the bidentate ligands comprise ethylenedinmine, acetylacetonate ions, dithiocarbamate, 2,2'-bipyridine, 1,10-phenanthroline, or 8-hydroxyquinolinato; the presence of a specific amount of crosslinking agent in the method; the method wherein step (c) occurs within a wellbore in a subterranean formation; the

method wherein the polysaccharide comprises guar and the crosslinking agent is a derivative of iron or ruthenium.

The Phillips et al patent discloses polymers useful in the formation of stable fracturing fluid, which include polysaccharides and polysaccharide derivatives, wherein guar, hydroxypropyl guar, hydroxyethyl guar, cellulose and its derivatives, and xanthan are set forth as examples (see column 9, last paragraph and column 10, lines 1 and 2). The Phillips et al. patent discloses cross-linking agents in combination with solutions of polymeric thickening agents, which include multivalent metal ions, wherein iron is listed as an example of a multivalent metal ion that may be used in the combination. Phillips et al discloses that the combination of cross-linking agents and polymers include admixing guar and its derivatives as a polymer with a cross-linking agent, wherein compounds suitable for use as crosslinking agents include acetylacetonate ions - in the form of titanium acetylacetonate (see column 10, 2nd full paragraph). The Phillips et al patent discloses that titanium acetylacetonate is an effective agent for hydroxypropyl guar or carboxymethyl hydroxypropyl cellulose (see column 10, lines 28-30). The guar, hydroxypropyl guar and hydroxyethyl guar of the Phillips et al patent anticipate the guar, hydroxy ethyl and hydroxyl propyl derivatives of gums in instant Claim 2. The iron disclosed in column 10, line 14 of the Phillips et al patent embraces the iron disclosed in instant Claims 3 and 7, and the titanium acetylacetonate disclosed in the Phillips et al patent at line 26 of column 10 embraces the acetylacetonate ions disclosed in instant Claim 4. Also, see column 3, lines 61-64 of the Phillips et al patent wherein it is disclosed that the fracturing fluid thereof is introduced into a well and displaced from the wellhead down the well to the vicinity of the subterranean formation, which embraces the subject matter of instant Claim 6.

The instantly claimed method of crosslinking a polysaccharide differs from the information disclosed in the Phillips et al by claiming a step that involve derivatizing a polysaccharide with the metal coordinating grup to produce a derivatized polysaccharide having bidentate ligands.

Although the Phillips et al patent does not point out a derivatized polysaccharide having bidentate ligands, Phillips et al does disclose in column 10, lines 28 and 29, "titanium acetylacetonate as being an effective cross-linking agent for hydroxypropyl guar", which suggests the formation of a derivatized polysaccharide having bidentate ligands as disclosed in the instant claims. See instant Claim 4 wherein the bidentate ligands thereof may be selected as "acetylacetonate ions".

> One having ordinary skill in the art would have been motivated to employ the process of the prior art with the expectation of obtaining the desired product because the skilled artisan would have expected the analogous starting materials to react similarly.
>
> Accordingly, it would have been obvious to one of ordinary skill in the art at the time of Applicants invention having the Phillips et al patent before him to use the method thereof to cross-linked a polysaccharide in view of the closely related structures of the starting materials (polysaccharides, coordinating groups and cross-linking agents) used to carry out the method thereof and the resulting expectation of the cross-linked polysaccharides having similar polymeric thickening properties.

(Office Action at ¶ 5.) Applicants respectfully disagree.

To form a basis for a § 103(a) rejection, a prior art reference must teach or suggest each element in the claim. MANUAL OF PATENT EXAMINING PROCEDURE ("MPEP") § 2142 (2006). Moreover, as in this case, where a reference must be modified to achieve the claimed invention, "obviousness can only be established . . . where there is some teaching, suggestion, or motivation to do so." *Id.* at § 2143.01 (citing *In re Kahn*, 441 F.3d 977, 986, 78 USPQ2d 1329, 1335 (Fed. Cir. 2006)). "The teaching, suggestion, or motivation must be found either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art." *Id.* Applicants respectfully submit that a person of skill in the art would not be motivated to employ the process disclosed in *Phillips* to perform a method that includes the step of "derivatizing a polysaccharide with a metal coordinating group to produce a derivatized polysaccharide having bidentate ligands," as recited in claim 1.

The Office Action acknowledges that *Phillips* does not teach or suggest this step. (*See* Office Action at ¶ 5.) Rather, the Office Action assumes that because "the skilled artisan would have expected the analogous starting materials to react similarly," the skilled artisan would have been motivated to use the method of cross-linking a polysaccharide to form a derivatized polysaccharide having bidentate ligands. *Id.* However, the Office Action provides no evidentiary support for this assumption. *See* MPEP at § 2144.02 ("[W]hen an examiner relies on a scientific theory, evidentiary support for the existence and meaning of that theory must be provided.") If official notice of this assumption is to be taken, "the basis for such reasoning must be set forth explicitly," and the Office Action "must provide specific factual findings predicated on sound technical and scientific reasoning to support [the] conclusion of common knowledge." *Id.* at § 2144.03 (B.). The Office Action's assertion that "the skilled artisan would have expected

the analogous starting materials to react similarly" simply because they may have "closely related structures" does not provide any such factual findings or technical reasoning.

Further, Applicants respectfully submit that a person of skill in the art would not be motivated to use the procedures disclosed in *Phillips* to perform the derivatization step recited in claim 1, even if those reactions may involve "analogous starting materials" having "closely related structures." First, as Applicants have discussed previously in their Request for Pre-Appeal Review and in response to previous office actions, derivatizing and cross-linking are completely different chemical reactions that result in completely different molecular structures (for example, as illustrated in Equations 2 and 3 of Applicants' specification, respectively). (*See* Amendment and Response to Non-Final Office Action Mailed December 8, 2005 (response filed March 7, 2006) at page 5.) Moreover, as Applicants' own specification illustrates, cross-linking interactions and derivatization reactions typically involve completely different reaction conditions (*e.g.*, reaction time). For instance, in the experiments described in Examples 1 and 2 of Applicants' specification, the cross-linking interactions occurred almost immediately (Example 1, ¶ [025]) or within about a minute (Example 2, ¶ [029]), whereas the derivatization steps in those experiments required stirring for a period lasting overnight (Example 1, ¶ [024]) or 8 hours (Example 2, ¶ [028]). The cross-linking reaction produced using the procedures disclosed in *Phillips* is described as being "rapid enough to cause effective cross-linking prior to entry into the formation," where the cross-linking agent is introduced into a fracturing fluid at a well site immediately prior to its introduction into a subterranean formation. (*See Phillips* at col. 11, ll. 44-46; *id.* at col. 12, ll. 40-50.) There is no teaching that this procedure used to cross-link polymers in such a short period of time could be modified to perform a derivatization that, in some cases, may take several hours to complete. Rather, a person of skill in the art would recognize these significant differences in the procedures and conditions used to produce cross-linking and derivatizing reactions, and thus would not assume that a procedure only used for cross-linking in *Phillips* could be used to derivatize a polysaccharide with a metal coordinating group to produce a derivatized polysaccharide having bidentate ligands, even if the starting materials used in that procedure are similar to those used in a derivatization process.

Therefore, Applicants respectfully assert that, because there is no motivation to modify the procedures disclosed in *Phillips* to perform the methods recited in claim 1, that claim is allowable over *Phillips*. Moreover, since "a claim in dependent form shall be construed to

incorporate by reference all the limitations of the claim to which it refers," and since claims 2-7 depend, either directly or indirectly, from independent claim 1, these dependent claims are allowable for at least the same reasons. *See* 35 U.S.C. § 112 ¶ 4 (2004). Accordingly, Applicants respectfully requests the withdrawal of these rejections.

IV. Allowable Subject Matter

The Office Action has objected to claims 33 and 34 as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. (Office Action at ¶ 6.) In this response, Applicants have rewritten claim 34 to include the limitations of claim 32, from which claim 34 previously depended, and thus claim 34, as amended herein, is allowable. With respect to claim 33, as that claim depends from claim 1, and claim 1 has been shown herein to be allowable, dependent claim 33 is similarly allowable.

V. No Waiver

All of Applicants' arguments and amendments are without prejudice or disclaimer. Additionally, Applicants have merely discussed example distinctions from the cited references. Other distinctions may exist, and Applicants reserve the right to discuss these additional distinctions in a later Response or on Appeal, if appropriate. By not responding to additional statements made by the Examiner, Applicants do not acquiesce to the Examiner's additional statements. The example distinctions discussed by Applicants are sufficient to overcome the rejections and objections stated in the Office Action.

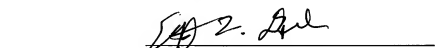
SUMMARY AND PETITION FOR A ONE-MONTH EXTENSION OF TIME TO FILE THIS RESPONSE

In light of the above remarks, Applicants respectfully request reconsideration and withdrawal of the outstanding rejections. Applicants further submit that the application is now in condition for allowance, and earnestly solicit timely notice of the same. Should the Examiner have any questions, comments or suggestions in furtherance of the prosecution of this application, the Examiner is invited to contact the attorney of record by telephone, facsimile, or electronic mail.

Applicants hereby petition under the provisions of 37 C.F.R. § 1.136(a) to extend the time for reply to the Office Action mailed on December 15, 2006 for 1 month from March 15, 2007 to April 15, 2007.

The Commissioner is hereby authorized to debit Baker Botts L.L.P.'s Deposit Account No. 02-0383, Order Number 063718.0175, in the amount of $120.00 for the one-month extension of time to file this Response. Should the Commissioner deem that any additional fees are due, including any fees for extensions of time, the Commissioner is authorized to debit Baker Botts L.L.P. Deposit Account No. 02-0383, Order Number 063718.0175, for any underpayment of fees that may be due in association with this filing.

Respectfully submitted,



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